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FOREST SERVICE

1967 ANNUAL REPORT

PRIEST RIVER EXPERIMENTAL FOREST
PRIEST RIVER, IDAHO

by

Calvin C. Carpenter

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Intermountain Forest and Range Experiment Station
Ogden, Utah

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INTRODUCTION

In summarizing the year 1967, continued progress in research activity and future planning dominated the major functions of the Priest River Experimental Forest. Extreme fire weather conditions prevailed during the latter part of the field season and these necessitated rigid enforcement of restrictions on all Forest activities, causing some delay and postponement of planned work by the research projects and cooperators using the Experimental Forest.

Following is a resumè of the activities for the 56th consecutive year of operation.

RESEARCH ACTIVITIES

Timber Management Research

Thinning PREF Transect

The thinning contract which included approximately fifteen acres from the top of South Ridge road to Benton Creek bottom, was completed July 10, 1967.

Vigor-Quality Outplantings

The vigor-quality plots were maintained by R. J. Steinhoff. Survival, height growth, and incidence of blister rust cankers were determined for each plot.

Maintenance, Plot 162

R. J. Steinhoff made the regular 10-year periodic measurements of height and D.B.H. on the surviving ponderosa pine in the racial variation plots established in 1911.

Growth and Yield

Plots 122 and 123 on Benton Creek were remeasured by Glenn Deitschman and Cal Carpenter in 1967. These plots were established in 1926 for the purpose of studying growth and yield.

Habitat-Type Mapping

A cooperative habitat-type mapping investigation to be conducted by Dr. Daubenmire on the Experimental Forest was scheduled for this year, but the work was postponed, initially because the new contour maps of the Forest were not ready, and later because of curtailed activities due to high fire-hazard conditions. Objectives of the investigation are (1) to clarify delineation problems involved in actual field mapping of habitat types, and (2) to provide a habitat-type map for the Benton Creek drainage. This is now planned for 1968.

Watershed Management Research

Benton Creek Model Watershed

The year 1967 proved to be a busy year for project 1601. Stilling well and instrument shelters of improved design were rebuilt for placement at three of the extablished snow melt sites. In addition, four new stations with snow melt gages were activated: (1) Station 39T, approximate elevation 3900 ft., with the proposed function of obtaining a control check between timber and clearcut snow pack, (2) Station 43, approximate

elevation 4300 ft., on a south ridge exposure between Benton Creek and Canyon Creek, (3) Station 48, approximate elevation 4800 ft., and (4) Station 51, approximate elevation 5100 ft. With the aid of snow melt gages, runoff from the snow pack can be determined hourly. The data obtained will be instrumental in flood and erosion control. A new H-flume and stilling well were added to the system of Benton Creek streamflow measuring. This is located on watershed #6.

Snow Interception Cooperative Study with WSU

Watershed management research, project 1601, in cooperation with Washington State University, initiated this study in 1965. With continued modifications, improvement in design, and expansion of sites, more informative data on snow interception and evaporation in the coniferous species should be obtained.

Forest Wildlife Habitat Research

During the summer of 1966, establishment of 12 permanent transects in five different areas was completed by L. Jack Lyon and Peter Stickney of the Forestry Sciences Laboratory in Missoula, Montana. Planned work on the plots in 1967 was deferred because of the extreme fire danger situation.

Forest Disease Research

Pole Blight

The three pole-blight induction plots were maintained. Plastic cover was replaced on the temporary plot, trenches were cleared of debris, and soil moisture samples were collected in June and September, 1967.

Dwarfmistletoe

Ed F. Wicker continued with the regular duties involved with the field plot establish in 1961 to study host specificity and age susceptibility of dwarfmistletoe in different tree species. The area which was prepared for planting the previous season was fenced, and 50 western white pine and 50 whitebark pine seedlings were planted. These seedling plots were installed for the purpose of investigating certain aspects of the relationships of Tuberculina maxima to white pine blister rust cankers.

Poria weirii

During the summer an 80-acre block, located within the scheduled clearcut area of the Lower Benton Creek timber sale, was completely mapped to locate and identify centers of Poria weirii infections. Plans have not yet been completed for treatment assignments, but trials of different tree species, fertilizer application, and stump removal will probably be included. The area is scheduled for regeneration following a broadcast burn that is tentatively scheduled for 1970.

Collection and Study of Fungi

Dr. Alexander H. Smith, University of Michigan mycologist, canceled his field work at the Experimental Forest this year due to the very dry summer weather and lack of good fall rains. On previous visits, Dr. Smith and his associated mycologists used the Experimental Forest as a headquarters while conducting intensive studies of mushroom fungi in northern Idaho.

Forest Insect Research

Larch Casebearer

In 1967, a new study was initiated on the Forest to determine the effects of casebearer defoliation on western larch. Eighteen trees, approximately 10 feet in height, were sprayed with malathion to exterminate the casebearer. These trees will be sprayed annually to prevent reinfestation. Measurements of lineal and radial increment of sprayed trees will be compared with those of neighboring unsprayed trees.

Forest Influences

Control Weather Station

During 1967, daily weather readings were maintained at the control weather station for the 56th consecutive year, contributing further toward making the records the most complete of any forested area in the state of Idaho. Weather records for each week and month, throughout the year, were furnished by the Experiment Station for weekly publication in the Priest River Times. A summary for the year 1967 and normal figures are shown in Table 1.

Fire Weather Station

In accordance with the National Fire Danger Rating System, fire weather records were maintained, and regular 10-day reports were mailed to the fire dispatcher at the Supervisor's Office in Sandpoint, Idaho. The regular season from which data is recorded includes May 1 through October 31. Fire danger during the season of 1967 remained from very high to extreme from July 25 to September 30. Total precipitation for this period was 0.35".

Precipitation

Precipitation records were continued throughout the year at the following locations: (1) control weather station, (2) Benton Dam, and (3) Benton Spring. The recorders at the control station and Benton Dam are recording

rain gages (serviced weekly). The Benton Spring Sacramento storage gage was removed and replaced with a long can gage which is measured monthly. Monthly precipitation at these stations for 1967 is presented in Table 2.

Snow Survey

In cooperation with the Soil Conservation Service, Benton Spring and Benton Meadow snow courses were measured monthly from January through May, 1967. The resulting data are presented in Table 3. The Benton Spring snowcourse measurements also contribute importantly to the watershed research project. Additional weekly measurements were made at three different elevations located on the watershed during the snowmelt season for the benefit of the watershed management research project.

Other Climatic Stations

New installations with advanced design, modification at previous locations, plus site improvements, marked a season with major accomplishment in connection with watershed management research. Refer to description of activities under that heading.

Table 1.--Control Station precipitation and temperature, 1967. Figures in parentheses are 50-year (1912-1961) averages.

Month	Precipitation	Temperature	
		Av. max.	Av. min.
	- - inches - -	- - - - - degrees F. - - - - -	
January	7.93 (4.02)	34.3 (30.3)	25.3 (16.6)
February	1.40 (3.09)	39.0 (36.9)	22.9 (18.3)
March	4.12 (2.65)	40.9 (45.3)	24.5 (23.5)
April	2.12 (2.00)	50.4 (57.6)	28.1 (29.6)
May	1.48 (2.18)	63.6 (66.7)	37.2 (36.6)
June	2.54 (2.27)	75.9 (75.3)	45.1 (42.5)
July	0.26 (0.87)	84.4 (83.1)	44.7 (45.5)
August	0.05 (1.04)	90.2 (80.2)	44.0 (43.4)
September	0.25 (1.67)	80.6 (70.9)	39.7 (37.8)
October	4.79 (2.96)	53.9 (56.6)	34.4 (32.1)
November	2.46 (3.76)	39.6 (39.6)	27.2 (26.7)
December	3.12 (4.37)	30.4 (32.5)	20.6 (21.1)
Annual	30.52 (30.90)	56.9 (56.1)	32.8 (31.0)

Table 2.--Precipitation at 3 stations on Benton Creek. Figures in parentheses are 8-year (1960-1967) averages.

Month	Control station --elev. 2344'	Benton Dam --elev. 2640'	Benton Spring --elev. 4700'
	- - - - - - - - - - inches - - - - - - - - - -		
January	7.93 (4.01)	8.62 (4.98)	6.20 (3.66)
February	1.40 (2.52)	1.41 (2.68)	3.00 (2.92)
March	4.12 (3.32)	4.06 (3.54)	4.20 (3.95)
April	2.12 (2.00)	2.12 (2.20)	2.30 (3.99)
May	1.48 (2.65)	1.53 (2.75)	1.90 (3.42)
June	2.54 (2.02)	2.62 (2.21)	4.10 (2.52)
July	0.26 (0.77)	0.33 (0.78)	0.50 (0.95)
August	0.05 (1.31)	0.05 (1.58)	0.00 (1.61)
September	0.25 (1.24)	0.37 (1.19)	0.60 (1.16)
October	4.79 (2.46)	4.39 (2.29)	3.80 (2.43)
November	2.46 (5.33)	2.45 (5.50)	2.60 (5.49)
December	3.12 (4.39)	3.95 (5.12)	3.80 (5.31)
Annual	30.52 (32.02)	31.90 (34.82)	33.00 (37.41)

Table 3.--Snow depth and water content at Benton Meadow and Benton Spring snowcourses, 1967. Figures in parentheses are 27-year (1937-1961) averages.

Date	Benton Meadow--elev. 2344'		Benton Spring--elev. 4775'	
	Snow depth	Water content	Snow depth	Water content
	inches			
Jan. 1	11.7 (12.0)	2.2 (2.7)	21.3 (30.9)	6.7 (8.4)
Feb. 1	10.2 (19.4)	2.9 (4.8)	50.2 (46.8)	16.9 (13.7)
Mar. 1	10.2 (19.3)	2.9 (6.0)	54.9 (55.3)	20.6 (18.4)
Apr. 1	4.6 (6.2)	1.6 (2.3)	63.6 (55.6)	22.8 (20.4)
May 1	0.0 (0.0)	0.0 (0.0)	59.3 (34.0)	22.9 (14.8)

ADMINISTRATIVE ACTIVITIES

Fire Protection

The fire plan was reviewed and found satisfactory. It contains the applicable portion of the Falls District plan, outlines the Experimental Forest responsibilities, and provides an action plan for the headquarters area.

Forest Roads

New roads completed in 1967, by Hedlund Lumber Company, on the Lower Benton Creek Sale are as follows: J2, J3, J4, K3, N2, N3, and N4. (See Figure 1).

Reconstruction of 2.12 miles of road 597-B, and .20 miles of 597-C was completed in 1967. No maintenance by the Kaniksu National Forest was performed on the Experimental Forest during 1967. (See Figure 1.)

Timber Sales

Lower Canyon Creek (5/25/65-Ron MacDonald).--This timber sale was described in the 1964-1965 annual report. An extension has been granted to 12/31/68. The status of this sale is presently not clear; schedules of site preparation and regeneration will be revised in accordance with developments.

Lower Benton Creek (11/28/66-Hedlund Lumber Co.).--This timber sale was described in the 1966 annual report. Approximately 50 percent was complete in December, 1967. All new road construction, plus reconstruction, has been completed. (See Figure 1.)

Improvements and Maintenance

A new topographic map of the Experimental Forest was prepared by Region One Surveys and Maps Branch from aerial photos flown in 1966.

In May of 1966, the original pump control at the reservoir was replaced, and since that time has proven very satisfactory.

A new sign was installed at the main entry.

Water samples taken the first of June and January have revealed no contamination.

The entire sewer system operated satisfactorily throughout the year.

Periodic maintenance checks of the Fire Behavior Experimental Area were made during the year. Removal of posts and fencing which enclosed a number of research plots was accomplished.

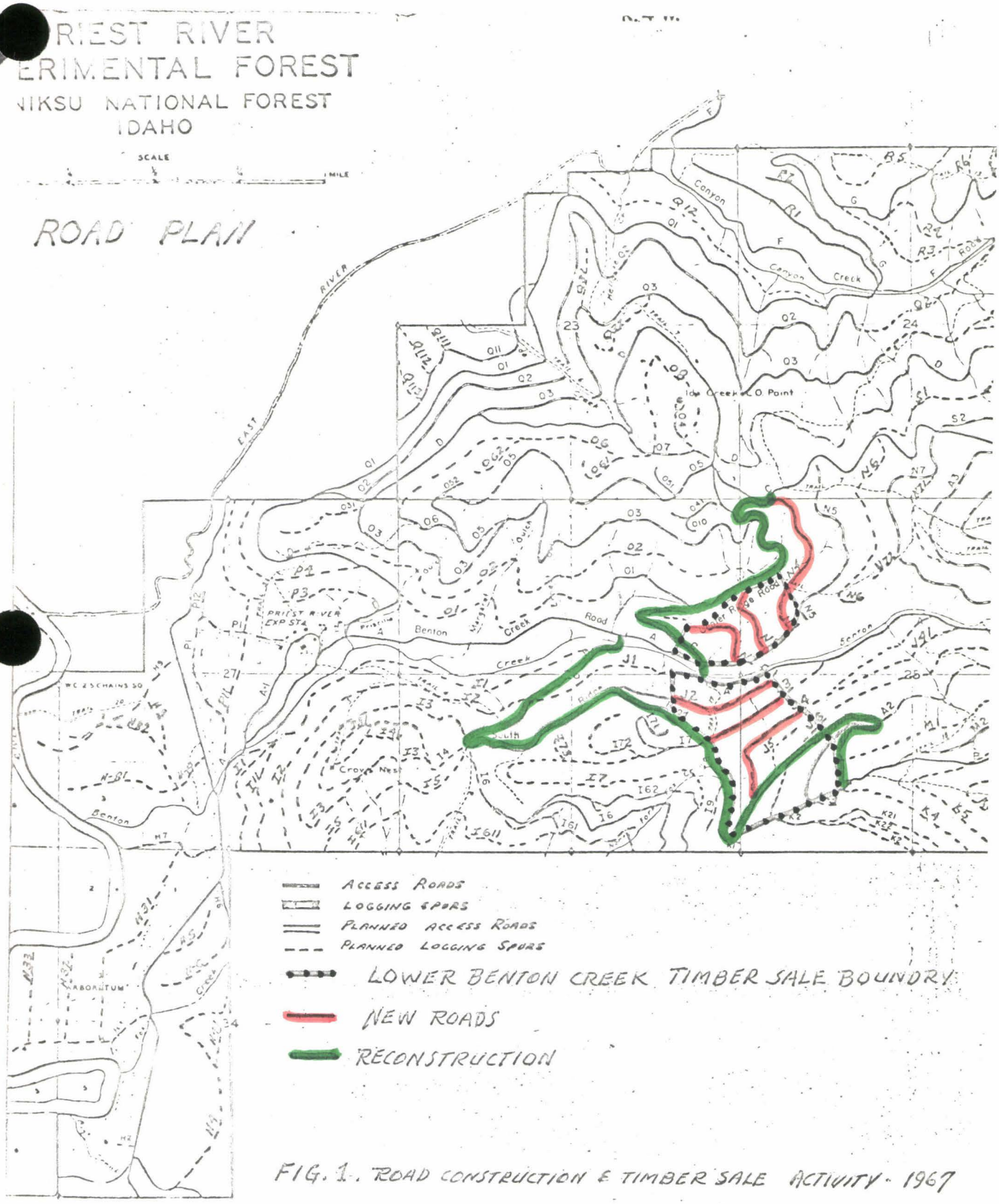

FIG. 1. ROAD CONSTRUCTION & TIMBER SALE ACTIVITY - 1967

Trees in the headquarters area surrounding the control weather station, and in frontal areas of cottages 1, 2, 3 and 4 were pruned. Sod removal, edging, and weed control were accomplished along all sidewalks and in the parking area. An application of calcium chloride to the roads around the buildings was made during June for the purpose of dust control.

The enclosure, instrument shelters, stands, and anemometer pole at control weather station were painted.

The fire weather installation was repainted, and a new wind counter and anemometer were added.

F.P.L. stain was applied to five WMR installations (two A-frame structures and three instrument towers) located at various points on the Experimental Forest.

A brief outline of building maintenance performed in 1967 follows:

A. Office.--A new wall in the first floor rest room was replaced, and paint was applied to the interior. The mail room was painted and the basement floor there was renovated. The front entry door sign was repainted and revarnished. Repair work was done on the chimney flashing.

B. Bunkhouse-Mess Hall.--The electric range was dismantled and discarded as it was defective and no longer operable. It was replaced with a propane gas range obtained as a surplus item from the Falls Ranger Station.

C. Cottage #1.--Minor modifications were made in the basement shower room. Downstair floors were sanded and varnished.

D. Cottage #2.--The exterior was stained with standard F.P.L. stain. A sump pump was installed in the basement to handle occasional flooding that has occurred during spring runoff periods accompanied by continued heavy rainfall.

E. Cottage #3.--The exterior was stained with standard F.P.L. natural finish. The entire kitchen area was painted, including built-ins, and a new cabinet top was laid. Wood finish in the living room was revarnished. The chimney flashing was repaired.

F. Cottage #4.--The exterior of the cottage and garage was stained with standard F.P.L. natural finish. Removal and replacement of window well backfill was necessary, due to a clogged condition which prevented drainage.

G. Shop.--The work shop area was rearranged and repainted. All tools were marked for easier identification, and , hopefully, less misappropriation.

H. All window well covers for the office and cottages were repaired.

I. Regular monthly checks were made on all installations, including the water supply. When abrupt change in temperatures occurred, added inspections were made.

Personnel

Local Employees:

Position	Dates	Names
Superintendent	1/30/65-present	Calvin L. Carpenter
Forestry Research Tech.	8/19/64-present	Bud L. Jeffers
Maintenance Man	Intermittent	Steven Booth
Maintenance Woman	Intermittent	Jane Knoke

Bud Jeffers, Forestry Research Technician, served in that capacity throughout the year of 1967 for the Watershed Management Research project.

Steven Booth, a senior attending Priest River High School, did an excellent job in assisting with the general maintenance of the headquarters buildings, grounds and Experimental Forest.

Jane Knoke did a commendable job in her janitorial duties during the summer season.

Inspections

April 27, 1967 - Inspection of fire weather station by William C. Fischer and Allan L. Hartong of the Northern Forest Fire Lab, Missoula, Mont.

May 21, 1967 - Inspection of control weather station instruments by Howard Kappes, U. S. Weather Bureau, Boise.

Aug. 15, 1967 - Inspection of control weather station and precipitation gage at Benton Dam, by Howard Kappes, Boise.

Official Visitors

The Experimental Forest was utilized by numerous groups and individuals during the year 1967. Following is a chronological listing of visitors who used the forest for research or educational purposes. (Intermountain Station personnel conducting research are not included.)

Dates	Visitors	Purpose of Visit
Feb.-March	Dr. Don Satterlund Boyd Hill (W.S.U.)	Project inspections and advisory consultations in connection with snow interception studies.
May 26,27	John D. Schultz and 6 students (Utah State University)	Road study and observation of erosion effects in clearcut areas.
May 27	Dr. R. Daubenmire and 10 students in field ecology class (W.S.U.)	Field observation of ecological communities and research activities at PREF.
	Dr. Hoffman (S.Dak. State Univ.)	Study of epiphytic organisms associated with Douglas-fir.
June 21- July 30 (intermittent)	A. D. Partridge Elmer Canfield Fred Johnson (Univ. of Idaho)	Study of ecology as a means of cull estimation in standing western redcedar.
July 10	Allen Isaacson and Robert Goodman (Coeur d'Alene N.F.) S. Blair Hutchison and Rulon Gardner (Ogden)	Field observations of WMR project study.
Oct. 9-10	R. F. Wambach (Univ. of Mont.) R. J. McConner (Mont. State Univ.)	Observe logging road design and construction standards.

Director's Staff Meeting

Priest River Experimental Forest was host to a Director's Staff meeting on July 31-August 1. Included on the agenda were discussions of the Experimental Forest objectives and plans and a tour of current research installations and management operations. Participants were as follows:

Joseph F. Pechanec - Director

Charles A. Wellner - Asst. Director, Forest Insect, Disease, and Timber Management Research

James P. Blaisdell - Asst. Director, Range Management and Wildlife Habitat Research

S. Blair Hutchison - Asst. Director, Forest Economics, Recreation, Utilization, and Engineering Research

Otis L. Copeland - Assistant Director, Forest Fire and Watershed Management Research

George Gruschow - Assistant Director, Research Support Services

Arthur P. Brackebusch - Chief, Northern Forest Fire Lab.

Glenn H. Deitschman - Project Leader, Silviculture, Moscow

C. E. Jensen, Intermountain Station Statistician

Cooperation

National forest administration provided technical advice and assistance on engineering problems associated with the general operation of the station. The Falls Ranger Station administered timber sales. The annual meeting with Falls District personnel to discuss the aspects of the Experimental Forest management, accomplishments, needs, and plans of joint concern was held on December 8, 1966.

A combined show-me and road inspection tour was conducted by Glenn Deitschman and Robert Pfister, June 15, for the benefit of Ogden and Kaniksu personnel. Following are the names of those who participated.

C. Wellner	Ogden, Utah
B. Plowgian	" "
G. Gruschow	" "
C. Stilwell	Kaniksu S.O.
R. Wise	" "
J. Hauer	Falls R.S.
T. Cardos	" "
G. Newton	" "